

GROUP WORK AND THE IMPACT, IF ANY, OF THE USE OF GOOGLE APPLICATIONS FOR EDUCATION

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ABSTRACT

The use of group work in teaching practices has been well supported in educational theories however the researcher has experienced a number of issues or areas of concern in having students work in groups to complete a major assessment for a second year Project Management course at a leading polytechnic in New Zealand. Factors potentially influenced by the majority of students having English as their second language, the inexperience of the Lecturer in facilitating group work and the lack of tools available to or recommended for students to use in facilitating collaboration and managing the administrative aspects of group work. For the purposes of the present research there are two primary areas of interest. Firstly, the problematic experience of students in coordinating or managing the administration element of group work involving scheduling meetings, corresponding, communicating and managing documentation, and further incorporating the challenges of collaborating as a group to produce a coherent and cohesive group work output or outcome. Students were required to use a web-based portal or wiki developed using Google Applications to assist in coordinating group effort, managing documents and communication, and collaborating to develop the required output in completing the group assignment. The research is aimed at identifying and clarifying what, if any impact, using Google Sites has on group work within a cohort of students undertaking the project management course.

KEYWORDS

Group work, Google, Google Sites, Collaborative Learning

1. INTRODUCTION

The use of group work in teaching practices has been well supported in educational theories pertaining to the “importance of interaction between social, affective and cognitive states in development and learning” (Blatchford, 2003). Group work aims to develop intellectual understanding, abilities and skills; communication, cooperative and teamwork skills; personal and professional growth; and reflective practices as well as encourage those involved in group work to be more independent and take ownership of their own learning (University of Sydney. 2015).

A major component of a second year Project Management course, offered as part of a Bachelor of Applied Management or Graduate Diploma programme at a leading polytechnic in New Zealand, is a Group Assignment which forms 30% of the students’ final grade. The Group Assignment requires students to work together, in groups of four or five, for the majority of the semester and deliver a project plan for a project idea as the group output.

The paper also requires students to complete a summative assessment half way through the semester and another at the end of the semester, in the form of a Test and Exam. Both assessments are individual assessments and weighted at 25% and 30% respectively. During the semester students also participate in two online forum discussions as a group and this is assessed at 15% of their module mark. By the end of the semester students should understand the basic principles and terminology of the profession of project management and how to apply these to create project plans.

In previous semesters a number of issues and areas of concerns were identified related to the group work component of this course. Some of these issues were: group members not pulling their weight, break downs in communication, lack of cohesion in the final output, alienation and/or exclusion of group members, general confusion regarding objectives and progress, versioning issues and files being lost, and dominance and power struggles between students. From the assessor’s perspective, there were also issues related to the

inability to effectively gauge individual contribution. Research suggests that these are rather common concerns amongst educators.

Factors that contribute to these issues and concerns include the fact that the majority of students are second language speakers of English, the convenor's inexperience at facilitating group work and the lack of tools available to or recommended for students to use in facilitating collaboration and managing the administrative aspects of group work. Postholm (2004) also identified difference in living conditions, education, life and work experience as having an influence.

This research is primarily interested in the problematic experience of students in coordinating or managing the administration element of group work, including scheduling meetings, corresponding, communicating and managing documentation, and further incorporating the challenges of collaborating as a group to produce a coherent and cohesive output.

2. THE STUDY

Students were required to use a web-based portal, or wiki, to assist in coordinating group effort, managing documents and communication, and collaborating to develop the required output in completing the group assignment.

The term Computer Supported Collaborative Learning (CSCL) may be used in this context. The purpose of which, is to provide a setting that supports collaboration amongst students to "enhance their learning processes, facilitate collective learning or group cognition" (Resta and Laferriere, 2007).

The tool they used was applications provided by Google which includes applications for email, calendar, real-time word processing, file and document storage, instant messaging and Voice of Internet Protocol (VOIP), and Google Sites which can be used to develop a structured wiki. All of these can be accessed online, from any device with an Internet connection and can provide "a whole new way to work together online" (Google, 2016).

Development of a wiki was the first deliverable of the group assignment and represented 20% of the overall group assignment mark. This component of the assignment was designed as a scaffolding exercise to enable students to experience working together as a group to deliver an output as a minor project within the overall group assignment. In their groups and supported by the researcher in the role of facilitator students would be involved in constructing knowledge and working through a problem-based activity in developing the platform for use in their group assignment. The students ability to work as a group as evidenced through group work and participation represented 30% of the overall group assignment mark.

To assist with the group work component of the assignment students were introduced to Bruce Tuckman's (1965) "forming-storming-norming-performing" model of group development soon after they were divided into groups. The model was explained from a theoretical perspective and then illustrated in terms of its application to the module where students were required to work together in groups to complete a major assessment. At the following weeks session students were asked to work in their assigned groups and construct a bridge from wooden sticks and other material. This exercise was designed to start the group thinking about how the group development model applied to their situation as an illustration of at least the initial stages of the model.

The research is aimed at identifying and clarifying what impact using Google applications has on group work when it's used to manage documents, communication and collaboration, amongst other elements of project administration.

It is envisaged that the use of a tool will also facilitate more effective assessment of individual contribution and overall participation in group work. The use of technology to screen individual contribution and/or group contribution may assist in reducing the incidence of social loafing; exerting less effort when working in a group than they would working alone (Deal, 2009).

The pilot study aimed to assist with the development of a further research protocol, the evaluation of research instruments, and the feasibility of the proposed research, given the researcher's inexperience at conducting research and dealing with the "unknown" with respect to the cohort's ability to learn to use, and willingly adopt the proposed tool.

The researcher made observations during the course of the semester and held a focus group session at the end with a random selection of the cohort as a representative sample.

3. DATA COLLECTION

The study involved thirty three students, divided into seven groups of between 4-5 students in Week 3, of a 14 week semester. Members of the student cohort were undertaking a Graduate Diploma in Operations and Production, Sales and Marketing or Event Management. Three of the students were domestic students and the remainder of the cohort was made up of international students from India (24) and China (6).

There was a considerable amount of diversity in the students' ethnic and cultural background, work experience, subject major of previous qualification, subject major in their current course of study and their spoken English proficiency. This information was obtained as part of an icebreaker exercise in Week 1 when students were asked to introduce themselves to the class. Furthermore, one of the course requirements was that students learn to use MS Project, and through observing the first three weeks of computer lab sessions the researcher identified that there was also considerable variation in the ability of members of the cohort to use computer software. The researcher then considered this variance and the diversity amongst students when dividing students into groups in an effort to ensure that the makeup of each group was similar and that no group had a seemingly unfair advantage or disadvantage when compared to another.

The cohort attended a three hour session each week. The first two hours were undertaken in a seminar style environment that has seating for up to 40 students. The first hour of this session was a lecture where the researcher covered theoretical subject matter. The room then enabled students to rearrange furniture into a setting more suited to group work, and to comfortably interact and work within their groups on the group assignment for the last hour. Students were then moved to a computer lab for the final hour of the weekly session where they learnt to use MS Project for the first half of the semester and were able to then use this time to work on their group assignment online during the second half of the semester.

From a qualitative primarily exploratory perspective, the researcher in their role as facilitator was able to talk to and observe students during these weekly face-to-face in class group work sessions. Although the majority of the group work was conducted by students outside of the classroom the weekly sessions did enable the researcher to observe interactions amongst members of the group and identify strengths and weakness amongst the group, which students participated in and contributed more to the discussion, which students tended to dominate, how the group went about assigning tasks to members, and how they planned to use, if at all, the tools available to them to facilitate collaboration, communication and document management. Students were able to ask the researcher questions in clarifying their understanding of the assessment requirements, whether their application of the theoretical principles of project management in developing the project plan were sound, any questions or concerns regarding the suite of Google applications and how to access and/or use the platform for the purposes of completing the required group assignment output. This latter element was more common during the second half of the semester when the computer lab sessions were able to be used to work on the group assignment in the Google applications environment.

It was important for the researcher that during the one-hour (and then two hour) group work component of the weekly sessions they remain in the role of a facilitator only and use the time to observe groups as they worked through the stages of group development, used the Google platform and developed the assessment requirements.

The researcher was also able to view a log of recent activity on each Google Site. This provided the name of the user logged in, the date and time of the activity, and a summary of the activity undertaken. There was however no indication of how long the user had been logged in and there appeared to be, perhaps due to the researchers own inexperience with the software platform, no way to extract this data for analysis and reporting purposes.

After the group assignment was submitted students were asked to attend a focus group session. Attendance was voluntary and the researcher did not themselves select students to participate. The representative sample was made up of 20 students who were available at the time of the focus group session and willing to participate in the research. Students were provided with a Participant Information Sheet and asked to sign a Participant Consent Form.

The focus group was designed to gain a deeper understanding of student perceptions, and any underlying reasons, motives or influencing factors, related to the impact on group work, if any, of the sample using Google applications for project administration and facilitating collaboration and communication in completing the group assignment assessment. The sessions provided an opportunity to ask specific questions to build on evidence obtained from the researchers own observations.

4. RESULTS

The pilot study, as the research can now be referred, found that the adoption of the collaborative nature of the tool was ad hoc amongst groups. There was only evidence of one group that worked online simultaneously, from separate locations, at various times, during the semester to collaborate on and develop the assignment output. This group developed the site and assignment output primarily through online collaboration. There was evidence, as observed using the Recent Activity information in the Google Site, of every group member participating and making a contribution. This group work was not evident as predominately during class room group work sessions given two of the five group members were not able to attend most weeks of the semester due to the hours they were working in paid employment. Interestingly one group member, who was present in the focus group, made significantly more online contributions than they did during in-class group work sessions. For this student, English was a second language and the somewhat confrontational nature of face-to-face group discussion was something that they were not accustomed to. Hence, they found the online environment ‘safer’ and were more willing to actively participate and contribute. This group member was a female and the other group members were male.

Two members of the group also commented that it was useful to be able to tag the researcher using the comments feature on pages in the Google Site if they required some assistance, feedback or clarification with respect to a piece of work.

This group was also the only group that used Google Hangouts in conjunction with Google Sites and a member of the group identified that they found it useful being able to have their Google Hangouts conversation running at the same time as working on a Google Doc within the Google Site. This was important as not all the group members were able to meet on a regular basis in person and so having an online environment that enabled the members to discuss content and develop it at the same time was essential to allowing the group to complete the assessment requirements.

With respect to Google Hangouts however the group members felt that they were not able to freely communicate using the platform, with the knowledge that the lecturer had access to their conversations. Thus, they were very careful in regards to what they said. There was also initially a disparity in the amount of effort members were investing in completing the assignment. One member then commented that being able to view the Recent Activity statistics was useful in identifying who was not contributing enough so that they could raise their concern with members in question. This helped ensure everyone was actively and effectively participating in the group assignment at least toward the end of the semester. Overall the group was awarded a B grade for the assessment as although the mark awarded for group work/participation was considerable compared to many of the other groups the standard of the final project plan was much lower than that required for an A grade.

Another group discussed each component of the assignment output at a face-to-face session each week, agreed on what would be written for that component in the assignment and then assigned the task of developing the Google Doc to a different group member each week. In this way, as explained by the Group Leader present at the focus group, they worked to ensure that everyone contributed to the assignment and worked as a team in producing the required output. During assessment, each member’s contribution was clear because the researcher could see who had participated in the online environment. The researcher was also able to observe similar cohesion during in-class group work sessions. As a result, their group output was cohesive; similar font and formatting, as well as language style, was used throughout.

This group was also the only one that had some fun with the online environment; they customised the template with group images, a team name, a calendar illustrating when meetings were to be held, and a well-structured sitemap that was aligned with their assignment. They also used a task management feature in the wiki template to list, assign and check off tasks as they were completed in developing the Google Site and their group assignment output. The students were able to identify that the group members’ positive outlook and willingness to cooperate as well as meeting face-to-face and discussing the requirements are the reasons they were able to work together so effectively. Other factors that may have influenced this group is that a domestic student and an exchange student from South America were members of the group. The domestic student may have had previous learning experience that utilized collaborative instruments. The exchange student was eager and motivated to understand the Kiwi way of learning. She was also very interested in getting to know people from different cultures and backgrounds. One member of the group felt that face-to-face sessions were essential since for most of the members of the group English was a second

language and so these sessions facilitated each member's comprehension of the requirements of the assessment, the theory covered by the researcher in lectures and how it applied to the project. The group also initially experienced difficulty in configuring the site and a member of the group admitted they initially questioned why use of the site in completing the group assignment was required at all. The group then moved through this by watching instructional videos together and then working together to configure and customize the environment. Members of the group present at the focus group acknowledged that they then soon came to appreciate the ability to upload documents and have other members of the group review them and make comments or suggestions. Although there was only little evidence of the group members working simultaneously the group did use the Google Site regularly for document management and some collaboration during the semester and although they did not use Google Hangouts the group did include screenshots from instant messaging conversations from an online communication application they were using to communicate outside of face-to-face sessions. The application used was Facebook including Facebook Messenger since all members of the group had access to and were familiar with it. Interestingly there were far fewer instances of online messaging than face-to-face meetings, the minutes of which were also stored in the Google Site, since all members of the group were able to commit to weekly meetings and attend in-class group work sessions perhaps due to the fact that only one member of the group was a part-time student and in paid employment. This group was awarded an A plus grade as their overall group assignment mark.

A third group recognized the role that developing the Google Site played as a minor project to enable the group members to experience working as a group in delivering an output in order to identify individual strengths and develop an agreed and effective approach to working as a group. One member commented that the group had at times discussed the group development model at weekly group meetings in order to identify at what stage the group was at in terms of the various stages of the model. The researcher had also observed this group during the storming stage as they worked on building the bridge during a class group work session. At that time two members of the group dominated as leaders however when reviewing the groups' profile page in the Google Site part way through the second half of the semester it was interesting to find that another member of the group had been assigned the role of Group Leader. When prompted to talk to this during the focus group the appointed Group Leader was present and advised that the group had agreed that given the timeframe available to meet the assessment requirements and the conflict that had arisen and was most likely going to continue with respect to the two members of the group dominating the in-class group work session that week the group had decided the best way forward in order to move through the norming and to the performing stage of the group development model someone other than the two dominating students needed to lead the group. They went on to explain that the group leader was chosen based on that members ability to get the group to work together to produce the Google Site, using this component of the group assignment as a further test of individual member strengths and weaknesses. This group did then attempt to work collaboratively in the online platform to develop the assessment requirements however their use of the Google Site environment was disparate. The group used WhatsApp Messenger to communicate outside of face-to-face sessions, since the majority of the group was familiar with this application. Evidence of this, as witnessed from screen-prints taken from the application and uploaded on the groups Google Site, illustrated that such communication was irregular and mostly involved arranging meetings, chasing up group members who had not turned up for a meeting or who failed to complete an assigned task, and confirming assignment requirements. This group was awarded a C plus grade for the group assignment.

There was only one other group that mentioned the group development model. Members of this group that were present at the focus group acknowledged that they were not be able to move past the storming stage and were in fact very rarely using the online environment they were requested to configure for communication, collaboration and document management. The researcher was able to see this reflected in the Recent Activity statistics from the Google Site where it appeared that only one or two members of the group were in fact logging in to the environment. The Google Site itself was not created and configured till well into the Semester and the researcher saw no evidence of the group working collaboratively, on the site itself or on a document accessible through the site, in this environment. This group was however still able to produce a project plan for assessment, as the final project plan is required in in printed form, but it lacked cohesiveness not only in terms of format and style but also in terms of many aspects of the content itself and in the application of project management principles to the project idea. The researcher observed that during class room group work session's one member of the group dominated and much of the time was spent assigning tasks with little or no time allocated to understanding relevant theory and discussing its application to the project idea. The group also did not upload screen prints of online messaging or communication to

their Google Site as evidence of group communication. This together with the general lack of evidence of group work and participation of every member of the group and the quality of submitted project plan resulted in the group being awarded a C minus grade overall for the group assignment.

The remaining three groups mostly only used the Google Site to upload documents developed offline or to develop parts of the required project plan as separate documents that were then combined as a printed version for submission. Their sites were also simple in structure however activity, albeit still minimal at times, was more frequent and involved all members of the group. The researcher also observed, during in class group work sessions, that there was evidence of the group having moved to the norming if not performing stage, in one case, of the group development model. As such there was discussion, acknowledgement and acceptance of individual contribution, and on occasions when the researcher was asked to take part in or contribute during group work sessions there was evidence of group cohesion. As a result, these three groups were awarded a higher mark for the group work/participation component of the assessment and this together with their mark for the group assignment output, although not as comprehensive or cohesive as the first two groups, resulted in two of the groups being awarded a B minus and one a C overall for the group assignment. One of these groups commented that having all the relevant files and documents stored centrally was useful given members of the group were rarely in contact face-to-face outside of class. They were able to use a section titled “research” to file documents and links that they had found useful in further understanding course material or that would be useful in developing the group assignment output. Other members of the group were able to access the same resources and work with the material. One of the groups also used a calendar feature within a Google Sites template to highlight when members of the group were available to work on the assignment and when they were involved in other activities such studying for or working on assessments for other subjects or working. This group also started to use a task management feature of the same template to list and assign tasks to be completed in developing the project plan. These groups all used WhatsApp Messenger to communicate outside of comments in the Google Site, primarily used for communicating with the researcher, and face-to-face sessions. When a member of the group present at the focus group was asked why the group had not used Google Hangouts the response generated further conversation with other members of the focus group around student preferences for using an application they were familiar with and that was easily accessible on a smartphone.

Interestingly, a small percentage of students found gaining access to the Google platform a little difficult, given they did not have an existing Gmail account with which they could login to the Google platform. The lecturer had mistakenly assumed that all the students would have a Gmail account. Google Sites is also apparently not well suited to use on a smartphone.

During the focus group, students also pointed out that it was a hassle to draft their content in MS Word and then upload and edit in Google Docs so as to present it as part of the group assignment output in a single document. These students were not using the Google Docs space to its full potential. Instead, they were worked individually and then pulled their contributions together for the purpose of assessment. As a result, the majority of the finished document lacked cohesion. Students were unaccustomed to using Google Docs and preferred to work with the familiar MS Word on computers at the Polytechnic or at home. The MS Word document at times reformatted automatically when imported to Google Docs which added to the confusion and unwillingness to adopt Google Docs as a tool.

The students also suggested that should the Google platform be used as part of the learning environment, that the content available to students should be customised. They felt overwhelmed by the application options and likened it to “opening a can of worms”. Students felt that generic videos from YouTube or other material off the Internet were not helpful to their understanding of setting up, configuring or using a Google Site to facilitate the group work component of the group assignment. Students suggested that in the future it would be beneficial for the lecturer to provide video tutorials for students to refer to, which are tailored to the use of the Google platform and suite of applications for this module.

5. DISCUSSION

This study has confirmed for the researcher that there are a number of elements at play that influence how successful a group is in working together and delivering a group output.

The research has identified that those students who used Google Sites and related applications to coordinate schedules, manage documents, communicate and collaborate, according to the students, had a positive impact on their group work and on improving the cohesiveness of the assignment output. It is apparent however that using the suite of applications alone is not on its own the only aspect of such an assessment that students need to be aware of and that they should focus on if they are seeking an A grade.

The research further identified that many students were comfortable using Google Sites as a tool to assist with project administration, once they had spent some time learning how to use it and were provided with, or directed to, sufficient guidance and support.

One group did not complete the setup of their groups Google Site until well into the semester while some who had done so earlier on, used it in a way that was unintegrated into their group work. This may be due to their limited aptitude and as the researcher identify due to the lack of tailored instruction and supporting material from the lecturer.

Some students were confused and questioned the purpose of using such a tool to assist with group work and how they would be assessed for the time and effort spent on learning and developing the tool and for using it. Many students preferred therefore to use an application they were already familiar with to manage communication outside of face-to-face group work sessions and meetings.

There was also evidence of the benefit of providing the cohort with a brief outline of one example of a theory related group development with some students acknowledging the importance of focusing on getting the group work component working well in completing the assessment requirements to an acceptable standard.

6. LIMITATIONS

Ethics approval was not granted by the institution until the final week of the semester, hence a comparison of attitudes and experience of group work before and after the use of the online platform could not be effectively gathered.

The lecturer, as researcher, should have taken a more systematic approach to observing students by keeping a weekly reflective research journal, to capture perspectives on group work. If ethics approval was obtained closer to the semester start date students could also have been asked to maintain a weekly reflective journal of their experience in working as a group as the groups moved through the group development model and as the groups took up using the Google applications suite. Students would also have then not been pressured to feedback an entire semesters experience in one focus group and the possibility of a significant and/or useful element of their experience being forgotten would have been minimized.

While this study was conducted based purely on qualitative data, a mixed method could be used to analyse each student's usage data from the recent activity log and document version history in each Google Site. Data could then be used to support the researcher's observations as well as student feedback captured in a reflective journal during the semester and at a focus group discussion. A questionnaire could also be used to assist with sample selection for the focus group and for collecting quantitative data to support evidence obtained through qualitative methods. Multiple methods would have contributed towards a clearer understanding of the students' group work experiences and the impact, if any, of using Google applications.

7. CONCLUSION

Following the pilot study a more in-depth literature review was conducted of existing research and findings in the field of education research concerned with collaborative learning and group work, as well as related pedagogy, and the use of teaching and learning technologies and in particular Computer Supported Collaborative Learning (CSCL), including consideration of appropriate research methods and instruments, in tertiary education.

The experience and initial findings of the pilot study together with the results of this literature review will be used to develop a research design for further research. It is envisaged that by using a mixed method approach in the future greater insight and stronger more robust evidence will be obtained in addressing the research question.

An important final note is that ideally in the future the bulk of any quantitative data collected should be conducted once the Group Assignment has been assessed and the final overall mark for the course has been moderated and finalized. This would avoid any possible distortion of student responses and feedback pertaining to the students assumption that their partaking in the research and the response or feedback they provide therein having any weighting on their final assessment result.

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